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MADRAS RECORD OFFICE.

Government of Madras.

Public works DEPARTMENT.

G.O. No. 535-36 Press/Mis.

442-45

Dated 28-2 1872.

Not to be folded or roughly handled

Proceedings of the Madras Government, Public Works Department,
28th February 1872.

Read the following papers :—

No. 442. From the Acting Consulting Engineer for Railways, to the Secretary to Government, Public Works Department, Fort St. George, dated Madras, 28th December 1871, No. 570.

WITH reference to G. O., No. 569, of the 27th April 1871, in the Judicial Department, I have the honour to forward letter No. 386, of the 28th June, from the Agent and Manager of the Madras Railway giving explanations regarding the arrangements for the safety of traffic on the North-West Line before the Cheyaur Bridge accident, and as now proposed.

2. The statements made by the Resident Engineer, Mr. Roberts, which are also supported by the Acting Chief Engineer, are strangely at variance with the conclusion arrived at by Mr. Master in paragraph 41, that no copies of the circular memorandum for the guidance of line watchmen had ever been supplied for use on the North-West Line. The records of the Chief Engineer's office show that the books have been repeatedly issued to the North-West Line, and Mr. Going affirms that the watchmen have been trained in strict conformity with the rules. Rule No. III. also provides for line watchmen being instructed as to their duties when unable to read even the vernacular copy of the rules.

The circular memorandum was forwarded to the Government of India for confirmation of the rules in July 1865, and sanction was given in November of the same year. The rules were first printed in May 1865 and have been kept in use ever since. A copy is enclosed.

Vide G. O., No. 3,793, dated 18th December 1865.

I have personally examined the Railway Officer's books and found at Arconum in the Resident Engineer's office an outlay of the receipt of Issue Note No. 714, dated 10th August 1870, conveying fifty copies of the circular memorandum, viz., in Tamil twenty, in English two, and in Telugu twenty-eight. I also found in the Chief Engineer's office at Royapooram the same Issue Note filed; it bears the signature of Mr. Pfeil and also of Mr. Jaikson, the Sub-Inspector at Cuddapah, who was under the Inspector, Mr. Smith, and signed the note in acknowledgment of receipt of the fifty copies.

3. The Acting Agent is unable, paragraph 4, to offer any suggestions as to the improvement in these rules; but mentions in paragraph 6 that from the 1st June last the number of night watchmen had been increased to allow a man for each mile and a special watchman for the sole charge of each large bridge, two Inspectors being also appointed to see that the watchmen are at their posts at night.

4. In the Rules and Regulations for the Madras Railway Company, in Section 18 it is laid down in paragraph 22 that "each Foreman or Maistry must watch over the portion of the permanent way in his charge every day before the departure of the first train," and in paragraph 33 that "each Foreman or Maistry is required in the event of a flood to examine carefully the action of the water through the culverts and bridges on his length," while by the circular memorandum, paragraph 12, the duty of watchmen is "to walk daily at least four times over their respective lengths to see that the line is in proper order." In

these rules nothing is said about night watchmen nor of inspections by night, and I think it advisable that rules should be submitted for the approval of the Government defining the duties of night watchmen both at the large bridges and on other parts of the line, and also the manner in which the Inspectors of night watchmen will exercise their supervision.

5. With a second letter, No. 430, of the 19th July, the Agent furnishes a report from the Telegraph Engineer explaining the form of the block system of signalling which he would propose to adopt.

By the block system the line is supposed to be blocked between two stations, that is, no train can come upon that portion of the line until a signal is given that the line is clear. Mr. Winter shows that if the telegraph wire is broken the signal cannot be given that the line is clear, and therefore no train coming from either direction would be allowed to pass the stations between which the wire has been broken. He would further, however, suggest a plan of his own adaptation, by which a danger signal would be exhibited at each station by red discs on the wire being brought to the earth. A watchman would by this means be able to convey intimation from any point on the line to the nearest station in both directions, not merely that the line is not clear but that something has happened causing the line to be blocked.

Mr. Winter has further devised a plan of self-acting signals for the large bridges; in the event of a bridge giving way the wire over it would cause a signal to be exhibited at each end of the bridge. A full description of this method of protecting a bridge, with reference to letter from the Government of India* of the 29th June 1871, No. 1,098, is given in the Agent's last letter, No. 767, of the 18th December 1871.

* *Vide* G. O., No. 1,886, dated 17th July 1871.

The arrangements proposed by the Telegraph Engineer are not at present submitted for sanction: they would involve a heavy outlay, and will have to be considered when the estimates are prepared. In the meantime, as noticed above, each large bridge is protected by a watchman and each mile of line likewise.

6. Mr. Anderson records his opinion, in his letter of the 28th June, paragraph 10, that night traffic can never be conducted with perfect safety on the North-West Line under the existing state of the law as regards the responsibility of the owners of tanks. The statement accompanying shows, too, that the line has been damaged on several occasions by the bursting of tanks.

Measures have been taken by the Railway Officers to add to the security of the masonry works in general, and, in conformity with G. O., No. 1,849, dated 13th July 1871, every bridge is to be reported on that has not the protection of a flooring and retaining walls. The railway will thus be placed in an efficient condition with respect to floods; but there is still the liability to danger from the tanks along the line.

7. I beg to recommend, for the consideration of the Government, that one or more competent officers should be deputed to examine all the tanks that might affect the North-West Line, with a view to their present state being ascertained and necessary repairs or improvements carried out. It is, in my opinion, desirable that not only the tanks adjacent to the railway should be inspected but also others

above in the same drainage basin, for it may happen that a tank which is itself in good order will be breached by the bursting of other tanks above that have been neglected.

In the year 1858, when the South-West Line was injured by the bursting of tanks, the Government gave orders for immediate repairs to all tanks to secure the railway from further damage; and in March of the following year the Chief Engineer furnished reports of the District Engineers of Chingleput, Salem, and Coimbatore.

G. O., No. 577, 26th October 1858.

G. O., No. 210, 14th April 1859.

I do not find any general notice as to the condition of tanks along the South-West Line of more recent date, and thus after a lapse of twelve years it would probably be both satisfactory to the Government and assuring to the Railway Company if an inspection were made in each district of the present state of the tanks.

Many tanks on both lines are owned by Zemindars and private holders of land, who are not liable to direct interference; but I would suggest that all tanks should be examined and estimate prepared for repairs that may be needed without regard to the source from which the funds may have to be provided. Some arrangement would at the same time have to be made by the Revenue Officers with the Zemindars and others regarding the execution of repairs or the provision of funds.

The Agent has again brought to the notice of the Government the adjust of liability to danger from tanks near the line in his letter No. 702, of the 22nd November, which has been recorded in G. O., No. 3,151, dated 14th December 1871.

8. The Agent of the Great Southern of India Railway explains in the papers marginally noted the system in force on his line.

From Resident Engineer, No. 12,321, dated 18th May 1871.
From Agent, No. 4,138, dated 14th August 1871.

An Inspector sends a certificate every fortnight of the state of the works under his charge. All bridges are examined every morning by a Gang Maistry appointed to two miles of the line. The watchman also goes over his two miles in the morning to see that keys, etc., are secure before the trains pass.

The rules, as per copy forwarded, are printed in English and Tamil and given to Inspectors, Sub-Inspectors, Gang Maistries, and watchmen. The Inspector is held responsible that every one under him thoroughly understands the rules.

There are no night trains on this line at present, and it is not contempl[illegible] that there should be any night service on the length of line now open.

From B. ANDERSON, Esq., Acting Agent and Manager, of the Madras Railway [illegible] Acting Consulting Engineer for Railways, dated Madras, 28th June 18[illegible]

WITH reference to the Proceedings of the Madras Government, Judici[illegible] 27th April 1871, I have the honour to offer the following observati[illegible]

2. The record of the evidence taken before M[illegible] a nature as almost to preclude the possibility [illegible] remarking upon [illegible] deductions wh[illegible] of the Go[illegible] he[illegible]

3. In the first place, the enclosed extract of a letter from the Chief Engineer forwarding copy of a letter from Mr. L. Roberts will, I trust, satisfy the Government that Mr. Master is not correct in his statement that the Circular Memorandum for the guidance of Watchmen, dated 26th May 1865, has never been distributed on the North-West Line.

4. These rules, which appear to me to be of the clearest and most comprehensive nature, were supplied to the Resident Engineer of the 1st Division, North-West Line, so far back as 26th May 1865, and have since then been repeatedly issued both in English and the vernacular as required. I am unable to offer any suggestions as to their improvement.

5. The whole question as regards the best precautions to be adopted in order to ensure the safety of night trains running on the North-West Line has for a long time past engaged my most serious attention, and on last Friday, the 23rd instant, I held a meeting in my office at which the following gentlemen were present :—

Acting Chief Engineer.
Locomotive Superintendent.
Traffic Manager.
Electric Telegraph Engineer.

6. Mr. Going explained that from the 1st of the present month the number of night watchmen was increased to one man per mile and a special watchman was appointed for the sole charge of each large bridge. Two Inspectors of night watchmen also were entertained, whose duties consist in accompanying the night trains to see that the watchmen are at their posts.

7. Mr. Winter exhibited a very ingenious apparatus for signalling across large bridges, and which in the event of serious damage to the bridge would cause a danger signal to be displayed at either side.

8. The Committee was of opinion that in addition to the precautions already adopted a Semaphore Signal should be erected on each side of all large bridges, such as the Cheyaur, Chittravutty, Pennair, Toongabudra, etc., and that each bridge should likewise be provided with Mr. Winter's telegraphic signalling apparatus; that the speed of night trains should be restricted to fifteen miles per hour between Cuddapah and Gooty and to twelve miles per hour between Gooty and Adoni until the cotton soil banks shall have become thoroughly consolidated.

9. As regards the employment of night Signallers at all stations past which night trains now run, it was pointed out by Mr. Church that it usually takes several months to train a Signaller in the use of the ordinary telegraph instrument, and it appeared to the Committee that the desired object would be much more completely attained by the adoption of what is known as the block system of signalling, a system that with slight additions can be so arranged as to enable a watchman on any part of the line to convey a danger signal to the stations on either side.

10. Every effort is being made to provide without delay the foot-paths and hand-rails approved
y the Bridge Commission. It is hoped that the arrangements which have already been adopted
those which are now proposed will meet with the approval of Government. I desire, however,
e on record my opinion that night traffic can never be conducted with perfect safety on the
est Line under the existing state of the law as regards the responsibility of the owners

the whole line between Arconum and Goondacul there are a number of tanks that
menace to the safety of our line. I subjoin, for the information of Government,
the cases of interruptions to traffic that have resulted from breaches to tank
Line since 1864, and I have only to add that a recent decision of the
dras Railway Company v. The Carvetnugger Zemindar has
ls, inasmuch as it tends to remove all responsibility
and thus deprives the Railway Company
ed.

Proceedings of the Madras Government, Public Works Department, 28th February 1872.

12. I beg to forward, for the sanction of Government, a revised time table to come into effect on and after Sunday the 9th proximo, which provides for the restriction as to speed referred to above, and shall feel obliged by your communicating the necessary sanction as early as possible.

Extract from a letter from the Acting Chief Engineer, No. 253, dated 15th May 1871.

WITH regard to the observations made in the G. O. under reference on the subject of the rules in force on the Madras Railway for the guidance of watchmen, I must call attention to paragraph 41 of Mr. Master's letter to the Chief Secretary, in which, when alluding to the printed copy of these rules, he states as follows, "It is quite clear, however, that no copies, English or vernacular, have ever been supplied for use on the North-West Line. Mr. Roberts himself was not aware of the existence of this memorandum, and the Inspector and Section Maistry had not been instructed to use it." On reading this portion of what I supposed to be Mr. Roberts' evidence it seemed so unaccountable that I wrote to him for an explanation, and you will observe from the appended copy of his reply that the Magistrate did not fully apprehend his evidence in this matter, also that he was perfectly conversant with the rules laid down for watchmen.

The records of this office show that a number of copies of the memorandum of "Rules for the guidance of Watchmen" were supplied to the Resident Engineer of the 1st Division, North-West Line, so far back as May 26th, 1865, and that since this date they have been repeatedly issued on the North-West Line, according as required, both in English and in the vernacular. Previous to May 1865, it had been the practice to supply Resident Engineers of Divisions with copies in the vernacular of the rules applicable to line watchmen as extracted from Section 29 of Act XVIII of 1854 and issued by the Government of India for the guidance of all Railway Companies in India. As these rules appeared to us insufficient, the revised set of rules alluded to in Mr. Master's letter as the "memorandum" was issued by this office, as previously stated, in May 1865 and received the formal sanction of Government in November of the same year. Since this date our watchmen have been trained in strict conformity with these rules both on the North-West and South-West Lines, and I am of opinion that as a whole their, duties have been well performed.

From L. ROBERTS, Esq., Resident Engineer, 1st Division, North-West Line, to the Acting Chief Engineer, dated Arconum, 11th May 1871, No. 947.

YOURS, No. 615, of 8th instant.

With reference to the report of the Magistrate of Cuddapah on the Cheyaur Bridge accident, Mr. Master must have misunderstood my evidence. I was shown a book by him which is, I believe, that furnished to Station Masters and which was in Telugu. I was asked by him if that book contained all regulations for watchmen. I told him I believed it did, but I could not positively say so as I could not read it. I had not had time to get English copies of the Rules and Regulations from my office, but a few days afterwards I forwarded one to him. I was perfectly aware of the existence of the Circular Memorandum for the guidance of Line Watchmen dated 26th May 1865, but I had not a copy by me at the time.

Mr. Smith cannot have known what he was talking about when he gave his evidence. All the Inspectors have been continually supplied with the books, and Mr. Smith himself received fifty copies in August 1870. All the Inspectors have been perfectly acquainted with these rules whenever I have examined them in them.

The Section Maistry had only been on the line a few weeks, and Mr. Smith may not have supplied him with a copy.

B

Statement showing date, position, and nature of each instance which has occurred on the Madras Railway of interruption to traffic caused by damage to the works from floods.

Date of accident.	Position.	Nature of breach.
21st November 1864.	Breach at 62nd mile, North-West Line, on 19th November 1864.	Bursting of a large tank known as Govindarajcoopum, about ten chains to the west of the point where the bund is crossed by railway; the ballast and part of embankment were washed away.
,, ,, ,,	Breach at 78th mile, North-West Line, on 19th November 1864.	Bursting of a tank bund some four or five miles up the valley. Two-feet culvert washed away, and a breach about 40 feet wide was made in the embankment.
30th ,, ,,	Breach at 62nd mile, North-West Line, on 28th November 1864.	Bursting again of the Govindarajcoopum Tank, and the line breached as on the 19th instant.
8th December 1865...	Breach at 71½ mile, 80th mile, and 96th mile, North-West Line, on 5th December 1865.	Bursting of Pootoor Tank bund (71½ miles), completely carrying away a bridge of 3-15 feet arches and leaving a gap of 120 feet. Bursting of Coyempettah Tank bund (80 miles), carrying away a 12-feet and a 6-feet arch, and leaving gaps of 140 and 120 feet, respectively. Several bridges in this locality were more or less damaged by scour. Railway line breached near Ballapully bank by the overflowing of a torrent (96th mile).
25th August 1866 ...	Flood at 132nd and 133rd miles, North-West Line, on 21st August 1866.	Bursting of a tank bund, inundating the line about 15 chains between 132nd and 133rd mile, North-West Line.
15th October ,,	Bursting of Coyempettah Tank bund at 80th mile, North-West Line, on 10th October 1866.	Bursting of Coyempettah Tank bund (80th mile). The rush of water through the screw pile bridge damaged the revetment of the abutment.
7th July 1868... ...	Breach at 171st mile, North-West Line.	Bursting of a tank bund between Cuddapah and Camelapore, by which three arches of 5-30 feet arch bridge at 171st mile were washed away.
20th September 1870.	Breach at 168th and 172nd miles, North-West Line.	At 168 miles, in consequence of the bursting of tanks, a small bridge was scoured, and at the 172nd mile the bank was flooded but no interruption was caused to traffic.
3rd November ,,	Breach at 163rd and 168th miles, North-West Line.	Bursting of tanks in the neighbourhood of Cuddapah. The pier of double nine-feet girder bridge at $\frac{163}{10}$ miles gave way, also the east abutment of the twelve-feet girder bridge at $\frac{168}{1}$ miles.

(Signed) B. ANDERSON,
Acting Agent and Manager.

From B. ANDERSON, Esq., Acting Agent and Manager of the Madras Railway Company, to the Acting Consulting Engineer for Railways, dated Madras, 19th July 1871, No. 430.

WITH reference to your letter, No. 433, of the 5th instant, I have the honour to enclose you a copy of a Report* made by the Telegraph Engineer explanatory of the method by which he proposes to enable watchmen to convey a danger signal to the nearest station.

* No. 341, 10th July.

From G. K. WINTER, Esq., Telegraph Engineer, to the Acting Chief Engineer, Madras Railway.

(Here enter No. 341, dated 10th July 1871.)

Proceedings of the Madras Government, Public Works Department, 28th February 1872.

From the Agent and Manager of the Madras Railway Company, to the Acting Consulting Engineer for Railways, dated Madras, 18th December 1871, No. 767.

With reference to your letter, No. 736, of the 28th ultimo, I have the honour to observe that this office letter, No. 386, of the 28th of June, does not indicate any provision for carrying a danger signal from our large bridges to the stations on either side. It is proposed that the system of signalling at large bridges shall be complete in itself, each bridge being provided with a Semaphore Signal at either end. The signalling apparatus devised by Mr. Winter is of a very simple description, and can be worked by the watchmen in charge of the bridge. It consists of a wire which runs from end to end of the bridge along the flange of the girder, and is connected at both ends with an instrument which exhibits either a red or white signal, as may be required. The mode of working is as follows.

2. Taking the Palar Bridge as an example, let us suppose a train expected from Madras. The watchman from the western bank of the river, after having carefully examined the bridge and returned to his station, by merely moving a handle on the instrument at his side of the river displays either a safety or danger signal to the watchman on the east bank of the river. On receipt of this signal the Semaphore is placed either at danger or all right as indicated.

3. In the ninth paragraph of the letter* under reference the block system of signalling is recommended, the use of which does not entail the necessity for the employment of trained Signallers. Any man who may be on duty at a station can see for himself whether the instrument exhibits a red or a white signal, and a watchman on any part of the line, by either cutting the wire or "putting on earth," causes the block instruments at the stations at each side of him to indicate danger.

* From Agent and Manager, to Consulting Engineer, No. 386, dated 28th June.

4. I conclude that it is unnecessary for me to say that the proposals referred to above have not yet been carried into effect, and, although Mr. Anderson's letter, with which he submitted them for the sanction of Government, is dated as far back as the 28th of June last, I have not yet been informed whether they have been approved or not, neither have I learned whether the explanation afforded by Mr. Anderson in the first portion of his letter was considered by His Excellency the Governor in Council to have cleared the officers of the Company in regard to the alleged non-distribution of rules for the guidance of line watchmen.

From the Agent of the Great Southern of India Railway, to the Acting Consulting Engineer for Railways, dated Negapatam, 14th August 1871, No. 4,138.

The inquiry contained in the first paragraph of your letter, No. 241, of the 3rd instant having been referred to the Resident Engineer, I have now the pleasure to enclose a copy of that officer's reply.

2. In answer to your second question I have to state that no train is allowed to leave one station until intimation (from the station in which direction the train is proceeding) has been received by telegraph that the line is clear.

From the Acting Resident Engineer, to the Agent of the Great Southern of India Railway, dated Trichinopoly, 9th August 1871, No. 12,759.

In answer to your letter, No. 6,091-2,120, I have to inform you that the Rules and Regulations to be observed by all employés on this Railway are printed both in English and Tamil, and that a copy is handed to each Inspector, Sub-Inspector, Gang Maistry, and watchman. The Inspector's own copy is, of course, in English, and, when a Sub-Inspector can read and understand

English, his copy is also in English; if he cannot read English he is furnished with a Tamil copy. All Gang Maistries and watchmen have a Tamil copy, but very few can read, as might be expected in men of their position. Each Inspector is responsible that his Sub-Inspector and all his Gang Maistries and watchmen thoroughly understand the Rules and Regulations, so far as their work is concerned, and no man is allowed to go on the line as Gang Maistry or watchman until the Inspector has satisfied himself that he understands the rules.

2. All our Permanent Way Inspectors have served in the capacity of Sub-Inspectors on this line, and have been familiar with the Rules and Regulations for years.

3. There is no fixed time for examining the watchman and Maistries as to their knowledge of the Rules and Regulations; but the Inspectors satisfy themselves from time to time that they are understood by all employed on the line under them.

Copy of letter, No. 12,321, *dated* 18*th May* 1871, *from the Acting Resident Engineer to Agent.*

WITH reference to the ninth paragraph of Government Order, No. 106, I have to report as follows.

2. The opened portion of our line is 168 miles long and is divided into four lengths of about 42 miles each. In charge of each portion there is an Inspector of Permanent Way and under him a Sub-Inspector. The Inspectors are, in the first place, responsible for the security of all bridges and other works on their lengths; but, as it would be impossible for an Inspector to examine all works under his charge every day, the rule hitherto has been for each Inspector to examine every bridge on his length once a fortnight and to send in a report in the form of a certificate to the Resident Engineer with any remark he may have to make as to the state of the works under his charge. All bridges are examined every morning before the passing of the first train by the Gang Maistries, who have each charge of two miles. The line watchman also goes over his two miles in the morning to see that all keys and bolts, etc., are secure, and to make them so if they are not before the first train arrives.

3. In the event of a Gang Maistry or line watchman finding anything defective with the works or way that might endanger the safety of a train, it is their duty to show a "danger signal" up and down the line and to report the matter at once to the station on each side, from which points the news would be telegraphed to the Inspector. When special trains are running it is sometimes found advisable to put on a few extra watchmen, who are generally selected from the gang coolies in preference to employing entire strangers to the line.

4. In conclusion, I have only to say that I consider the system a good one for a line on which night trains are not run, and that I do not at present see how it can be improved without adding very considerably to the cost of maintenance.

No. 443. Read the following endorsement of the Acting Consulting Engineer for Railways, dated Madras, 13th January 1872, No. 17.

Read the following letter from the Agent and Manager of the Madras Railway Company, to the Acting Consulting Engineer for Railways, dated Madras, 6th January 1872, No. 6.

I HAVE the honour to enclose, for the information of Government, the copy of a communication* which I have just received from the Traffic Manager reporting a serious error which was made in the alteration of meeting stations this morning, but which was happily unattended with accident.

* No. C.$\frac{9}{5}$., dated 6th January 1872.

2. With reference to the last paragraph of Mr. Church's letter I beg to state that I have instructed him at once to reduce Veyas Row and on no account to entrust him with the duty of altering trains again.

From H. E. CHURCH, Esq., Traffic Manager, to the Agent and Manager of the Madras Railway Company, dated Madras, 6th January 1872, No. C.$\frac{4}{5}$.

Alteration of Meeting Stations.

I BEG to report that in altering the meeting station of the 8-15 A.M. from Beypoor and the 5-40 A.M. Special Troop Train from Madras this morning, Veyas Row, Station Master of Madras, who was deputed to perform this duty, omitted to stop the 5-40 Train, which was late (as prescribed in the Rules printed at page 34 of the Working Time Table dated 1st October 1871), before he directed the 8-15 A.M. to proceed, and the consequence was that both trains were between Tinnanore and Trivellore stations at the same time. Fortunately the trains were stopped about one mile apart when within two miles of Trivellore, and the 8-15 A.M. was backed into that station to allow the 5-40 Special to pass.

I have withdrawn from Veyas Row the power of altering the meeting stations of trains, and do not think it is desirable that he should be again entrusted with this important duty.

SUBMITTED to the Government.

The Special Troop Train did not get away from Madras till some time after the hour fixed for its departure, viz., 5-40 A.M., on the 6th instant, and the Station Master at Madras failed to give notice to the Guard and Driver of the Troop Train to stop before he signalled to the ordinary train coming in the opposite direction to proceed from Trivellore.

According to the rules given in the Working Time Table,* at page 34, the Station Master should have first ordered the Troop Train to stop at Tinnanore, and, the Guard and Driver having acknowledged the order, advice should then have been sent to Trivellore to allow the meeting train to come on to Tinnanore. In consequence of the Station Master's neglect of duty, however, the two trains were running face to face between the Tinnanore and Trivellore stations. Fortunately it was in the day time, and, the line being both level and without any sharp curves or obstructions to impede the view, the Driver of each train perceived the danger at a distance and thus the collision was averted.

* Copy enclosed.

2. This occurrence suggests grave doubts as to the system of working traffic affording security, and I think the Agent should be requested to take into full consideration at once the question of introducing the block system, and to furnish the estimate as referred to in the papers submitted with my letter No. 570, dated 28th December 1871.

3. The Agent has reduced the position of Veyas Row, the Station Master, and directed that he shall not again be entrusted with the duty of altering trains.

(Signed) H. L. PRENDERGAST, Major, R. E.,
Acting Consulting Engineer for Railways.

Proceedings of the Madras Government, Public Works Department, 28th February 1872.

No. 444. ORDER THEREON, 28th February 1872, No. 535.

RAILWAY, No. 62.

IN submitting the result of his inquiries in connexion with the Cheyaur Bridge accident on the night of the 20th October last the Magistrate of Cuddapah pointed out certain particulars in which he considered the Company's rules to be deficient and offered suggestions for the more safe and efficient conduct of the traffic in future. In reviewing Mr. Master's report the Government in the Judicial Department requested the Agent and Manager of the Madras Railway to state his opinion, through the Consulting Engineer, to the Public Works Department on the practicability of the proposals made, and in the papers above recorded these instructions are complied with.

G. O., No. 569, dated 27th April 1871.

2. Mr. Master reported that the latest rules issued for the guidance of line watchmen were never distributed on the North-West Line, and that even those rules contained no instructions as to the precautions to be taken in bad weather or any particular orders in regard to the protection of large bridges by signals or otherwise. He accordingly suggested that a new set of rules should be framed embracing these omissions, and that measures should be adopted for the stricter supervision of the night watchmen and the introduction of an improved system of signalling on occasions of special emergency. Mr. Master further recommended the employment of a night staff for every station without exception, which would be available for carrying out the provisions of the rule which requires that no engine with or without a train shall be permitted to leave one station for another until it shall have been ascertained by means of the electric telegraph that the line between is clear of all impediments.

3. The papers now before Government show that Mr. Master was mistaken in supposing that the rules issued for the guidance of line watchmen were not supplied to those on the North-West Line and that their instruction in them had been neglected.

4. At a special meeting of Railway Officers, which was held in June last to consider the precautionary measures necessary to ensure safety in working night trains on the North-West Line, it transpired that the number of night watchmen had been increased so as to allow one man for each mile of railway and a special watchman for the exclusive charge of each large bridge, two additional Inspectors having been also appointed to accompany night trains and supervise the watchmen at their posts. On the same occasion the Telegraph Engineer of the Company exhibited an apparatus for signalling across large bridges, which, in the event of serious damage, would cause a danger signal to be displayed at either side; and it was decided that the object sought to be effected by the employment of night Signallers at all stations would be more completely attained by the block system of signalling with some improvements suggested by Mr. Winter, which would prevent the passage of a train over any portion of the line that may be blocked until a signal is given showing the line to be clear. The Government approve of the principles of these precautionary measures, and direct that designs and estimates of the cost of carrying them into effect may be submitted as early as practicable.

5. The staff of watchmen now provided by the Company along the line and on the large bridges appears to be sufficient for all ordinary purposes. Special regulations for the conduct and movements of night watchmen with the duties of those in charge of bridges clearly defined should be submitted for approval.

6. The Government are inclined to doubt the gravity of the danger apprehended from the bursting of tanks along the railway if the bridges by which escape is supplied are well designed and kept in proper order; but they do not think it unreasonable that a special inquiry should be made into the state of all the tanks from which damage in case of bursting might accrue to the railway. The Superintending Engineers of the 3rd, 4th, 5th, 6th, and 7th Divisions will accordingly depute competent officers to examine all tanks in which breaches might affect the sections of the line within the limits of their respective divisions, with a view to their present condition being ascertained and the necessary repairs being carried out. The examination should extend not only to the tanks adjacent to the railway but to all above in the same drainage basin. In the case of tanks belonging to Zemindaries the Collectors will be desired to use their authority with the Zemindars to obtain the repair of such where defective.

7. The Government observe that night trains do not run on the Great Southern of India Railway and that the "line-clear" system of working is in operation on that Railway.

(True Extract.)

(Signed) J. CARPENDALE, Colonel, R.E.,

Secretary to Government.

No. 445. (DOCKET No. 536, dated 28th February 1872.)

COPY of the above is forwarded to the Government of India with reference to their letter No. 1,098, dated 29th June 1871.

(True Extract.)

Colonel, R. E.,

Secretary to Government.

Exd. A. S. Rodgers.

S. P. 913

No. 386 Madras Railway Company
Madras 28th June 1871.

From

Beresford Anderson Esqre
Acting Agent & Manager, M. R. Co.

To

Major H. L. Prendergast R.E.
Acting Cons. Engineer for Railways.

Sir,

With reference to the Proceedings of the Madras Government, Judicial Department dated 27th April 1871, I have the honor to offer the following observations.

2. The record of the evidence taken before Mr Master is of so confusing and contradictory a nature as almost to preclude the possibility of comment, and I shall, therefore confine myself to remarking upon the deductions which have called forth the censure contained in the 5th paragraph of the Government Order thereon.

3. In the first place the enclosed extract of a letter from the Chief Engineer forwarding copy of a letter from Mr. L. Roberts will, I trust, satisfy the Government that Mr. Master is not correct in his statement that the Circular Memorandum for the guidance of watchmen, dated 26th May 1865 has never been distributed on the North West Line.

4. These rules which appear to me to be of the clearest and most comprehensive nature were supplied to the Resident Engineer

of the 1st Division, North West Line so far back as May 26th 1865 and have since then been repeatedly issued both in English and the Vernacular as required. I am unable to offer any suggestions as to their improvement.

5. The whole question as regards the best precautions to be adopted in order to ensure the safety of Night trains running on the North West Line, has for a long time past engaged my most serious attention, and on last Friday the 23rd instant I held a meeting in my Office at which the following Gentlemen were present.

Acting Chief Engineer
Locomotive Superintendent
Traffic Manager
Electric Telegraph Engineer.

6. Mr Going explained that from the 1st of the present month the number of Night Watchmen was increased to one man per mile and a special Watchman was appointed for the sole charge of each large bridge. Two Inspectors of Night watchmen also were entertained whose duties consist in accompanying the Night trains to see that the watchmen are at their posts.

7. Mr Winter exhibited a very ingenious apparatus for signalling across large bridges, and which in the event of serious damage to the Bridge would cause a danger signal to be displayed at either side

8. The Committee was of opinion that in addition to the precautions already

adopted a Semaphore signal should be erected on each side of all large bridges such as the Cheyair, Chitravutty, Pennair, Toongabudra, &c. and that each bridge should likewise be provided with Mr. Winter's telegraphic signalling apparatus. That the speed of Night trains should be restricted to 15 miles per hour between Cuddapah and Ghooty and to 12 miles per hour between Ghooty and Adoni until the Cotton soil banks shall have become thoroughly consolidated.

9. As regards the employment of night signallers at all stations past which night trains now run it was pointed out by Mr. Church that it usually takes several months to train a signaller in the use of the ordinary telegraph Instrument and it appeared to the Committee that the desired object would be much more completely attained by the adoption of what is known as the block system of signalling, a system that with slight additions can be so arranged as to enable a watchman on any part of the line to convey a danger signal to the station on either side.

10. Every effort is being made to provide without delay the foot-paths and hand-rails approved by the Bridge Commission. It is hoped that the arrangements which have already been adopted and those which are now proposed will meet with the approval of Government. I desire however to place on record my opinion

that night traffic can never be conducted with perfect safety on the North West Line under the existing state of the law as regards the responsibility of the owners of tanks.

11. Along the whole line between Arconum and Goondacul there are a number of tanks that constitute a standing menace to the safety of our line. I subjoin for the information of Government a statement shewing the cases of interruptions to traffic that have resulted from breaches to tank bunds on the North West Line since 1864 and I have only to add that a recent decision of the High Court in the case of The Madras Railway Company versus The Carvatinagar Zemindar has caused the greatest anxiety to the Railway Officials inasmuch as it tends to remove all responsibility on account of the upkeep of tank bunds from the owners and thus deprives the Railway Company of its only guarantee that these bunds shall be efficiently maintained.

12. I beg to forward for the sanction of Government a revised time table to come into effect on and after Sunday the 9th Proximo which provides for the restriction as to speed referred to above and shall feel obliged by your communicating the necessary sanction as early as possible.

I have the honor to be
Sir
Your most obedient Servt.
[signature]
Ag. Agent & Manager.

Madras Railway

From

The Acting Agent & Manager

To

The Acting Cons: Engineer

Dated 28th June
Recd 24th " } 1871

No 386.

Regarding the accident at the Cheyair Bridge and the measures adopted for securing the safety of Trains passing over large Bridges —

6189/71

Extract from a letter from the Acting Chief Engineer, No. 263 dated 15th May 1871.

With regard to the observations made in the G.O. under reference on the subject of the rules in force on the Madras Railway for the guidance of watchmen, I must call attention to para: 41 of Mr. Master's letter to the Chief Secretary in which, when alluding to the printed copy of these rules he states as follows:- "It is quite clear however that no copies, English or Vernacular have ever been supplied for use on the North West Line. Mr Roberts himself was not aware of the existence of this Memorandum and the Inspector and Section Maistry had not been instructed to use it." On reading this portion of what I supposed to be Mr. Roberts evidence it seemed so unaccountable that I wrote to him for an explanation and you will observe from the appended copy of his reply that the Magistrate did not fully apprehend his evidence in this matter, also that he was perfectly conversant with the rules laid down for watchmen.

The records of this Office shew that a number of copies of the Memorandum of "Rules for the guidance of watchmen" were supplied to the Resident Engineer of the 1st Division North West Line, so far back as May 26th 1865 and that since this date they have been repeatedly issued on the North West Line according as required, both in English and in the Vernacular

Previous to May 1865 it had been the practice to supply Resident Engineers of Divisions with copies in the Vernacular, of the Rules applicable to Line Watchmen, as extracted from Section 29 of Act XVIII of 1854 and issued by the Government of India for the guidance of all Railway Companies in India - As these rules appeared to us insufficient the revised set of Rules alluded to in Mr Master's letter as the "Memorandum" was issued by this Office as previously stated, in May 1865, and received the formal sanction of Government in November of the same year. Since this date our watchmen have been trained in strict conformity with these Rules both on the North West and South West lines, and I am of opinion that as a whole their duties have been well performed.

(True Extract)

Wilford Andrews.

Acting Agent and Manager

Compotow

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Madras Railway Company
1st Divn. N.W.L. Engineer's Office
No. 947. Arconum 11th May 1871.

23

J. H. Gomez Esqre.
Ag. Chief Engineer

My dear Sir,

Yours No. 615 of 8th instant.

With reference to the report of the Magistrate of Cuddapah on the Cheyair Bridge accident, Mr. Master must have misunderstood my evidence. I was shown a book by him which is I believe that furnished to Station Masters, and which was in Teloogoo. I was asked by him if that book contained all regulations for watchmen. I told him I believed it did, but I could not positively say so as I could not read it. I had not had time to get English copies of the Rules and Regulations from my office, but a few days afterwards I forwarded one to him. I was perfectly aware of the existence of the Circular Memo for the guidance of Line Watchmen dated 26th May 1865, but I had not a copy by me at the time.

Mr. Smith cannot have known what he was talking about when he gave his evidence. All the Inspectors have been continually supplied with the books, and Mr. Smith himself received 50 Copies in August 1870. All the Inspectors have been perfectly acquainted with these rules whenever I have examined them in them.

The

The Section Maistry had only been on the line a few weeks and Mr. Smith may not have supplied him with a Copy.

Yours &c
(Sd) L. Roberts
Resident Engineer

(True Copy)

(Sd). T. H. Going
Ag: Chief Engineer

(True Copy)

[signature]

Ag: Agent and Manager

RR 6189/71

Compd. [illegible]

Statement shewing date, position and nature of each instance which has occurred on the Madras Railway of interruption to traffic caused by damage to the works from floods.

Date of accident	Position	Nature of Breach
1864 Novr 21	Breach at 62nd Mile North West Line on 19th Novr 1864	Bursting of a large tank known as Goundaray Coopum about 10 Chains to the west of the point where the bund is crossed by railway, the ballast and part of embankment were washed away.
" "	Breach at 78th Mile North West Line on 19 Novr 1864	Bursting of a tank bund some 4 or 5 Miles up the Valley, 2 feet Culvert washed away and a breach about 40' wide was made in the Embankment.
30	Breach at 62nd Mile North West Line on 28 Novr 1864	Bursting again of the Goundaray Coopum tank and the line breached as on the 19th instant
65 cer 8	Breach at 71½ Mile, 80th Mile & 96th Mile N W Line on 5th December 1865	Bursting of Pooloor tank bund (71½ Miles) completely carrying away a bridge of 3 - 15 feet arches and leaving a gap of 120 feet. Bursting of Coyampettah Tank bund (80 Miles) Carrying away a 12 feet and a 6 feet arch and leaving gaps of 140 and 120 feet respectively. Several Bridges in this locality were more or less damaa[ged] [illegible] …ure.

Continued

			Railway line breached near Ballapully bank by the overflowing of a Torrent (96th Mile)
1866 Augt	25	Flood at 132d & 133d Miles N W Line on 21st August 1866	Bursting of a tank bund inundating the line about 15 chains between 132d and 133d Mile N W Line
Octr	15	Bursting of Coyampettah tank bund at 80th Mile N W Line on 10th Octr 1866	Bursting of Coyampettah tank bund (80th Mile). The rush of water through the screw pile Bridge damaged the revetment of the abutment -
1868 July	7	Breach at 171st Mile N W Line	Bursting of a tank bund between Cuddapah and Camelapore by which 3 arches of 5 - 30 feet arch Bridge at 171st Mile were washed away -
1870 Septr	20	Breach at 168 & 172 Miles N W Line	At 168 Miles in Consequence of the bursting of tanks a small Bridge was scoured and at the 172d Mile the bank was flooded but no interruption was caused to traffic -
Novr	3	Breach at 163 & 168th Miles N W Line	Bursting of tanks in the neighbourhood of Cuddapah, the Pier of double 9 feet girder Bridge at 163/10 Miles gave way, also the east abutment of the 12 feet girder bridge at 168/1 Miles -

Blunford Andrews.

Agent & Manager

No. 430.

17/27

MADRAS RAILWAY..

AGENT AND MANAGER'S OFFICE.

Madras, 19th July 1871.

From

Beresford Anderson Esqre

Ag Agent and Manager. of the M. R. Co.

To

Major H. L. Prendergast, R.E.

Ag. Consulting Engineer for Railways.

Sir,

With reference to your letter No 433 of the 5th instant, I have the honor to enclose you a copy of a Report made by the Telegraph Engineer explanatory of the method by which he proposes to enable Watchmen to convey a danger signal to the nearest Station.

No 341- 10th July.

I have the honor to be
Sir
Your most obedient Servt.

Beresford Anderson -

Acting Agent & Manager.

21429

MADRAS RAILWAY.

From

The Agent and Manager.

To

The Consulting Engineer

for Railways.

Dated 19th Feb. 1897.

Recd. 20th " "

No. 430.

Enclosing Copy of a Report made by the Telegraph Engineer explanatory of the method by which he proposes to enable Watchmen to convey a danger signal to the nearest Station.

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Madras Railway Compan
Agent and Manager's Offi
Madras 18th Decr 1871

No. 767.

From

Robert B. Elwin Esqre
Agent and Manager, M. R. Co

To

Major H. L. Prendergast, RE
Acting Cons. Engineer for Rys.

Sir,

With reference to your letter No. 73 of the 28th ultimo, I have the honour to observe that this Office letter No. 386 of the 28th of June does not indicate any provision for carryin a danger signal from our large bridges to the stations on either side - It is proposed that the system of signalling at large bridge shall be complete in itself - Each bridge being provided with a semaphore signal at either end. The signalling apparatus devise by Mr Winter is of a very simple descriptio and can be worked by the watchmen in charge of the bridge. It consists of a wire which runs from end to end of the bridge along the flange of the Girder, and is connected at both ends with an Instrumen which exhibits either a red, or white signa as may be required. The mode of worki is as follows.

2. Taking the Palar Bridge as an example - Let us suppose a train expected from Madras - The watchman from th

Western bank of the river after having carefully examined the Bridge and returned to his station by merely moving a handle on the Instrument at his side of the river displays either a safety or danger signal to the Watchman on the East bank of the river. On receipt of this signal the Semaphore is placed either at danger or all right as indicated.

From Agent Kellanager to Cons Engr No. 386 dated 28th June.

3. In the 9th paragraph of the letter* under reference the Block system of signalling is recommended, the use of which does not entail the necessity for the employment of trained Signallers. Any man who may be on duty at a station can see for himself whether the Instrument exhibits a red or a white signal - and a watchman on any part of the line by either cutting the wire or "putting on earth" causes the Block instruments at the stations at each side of him to indicate danger.

4. I conclude that it is unnecessary for me to say that the proposals referred to above have not yet been carried into effect and although Mr Anderson's letter with which he submitted them for the sanction of Government is dated as far back as the 28th of June last, I have not yet been informed whether they have been approved or not, neither have I learned whether the explanation afforded by Mr Anderson in the first portion of his letter was considered

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by His Excellency the Governor in Council to have cleared the Officers of the Company in regard to the alleged non-distribution of Rules for the guidance of line Watchmen.

I have the honour to be
Sir
Your most Obedient Servt.
[signature]
Agent & Manager.

Madras Railway

From
The Agent & Manager
M. R. Co.

To
The Ag: Cons: Engr.
for Railways

Dated 18th }
Recd 19th } December 1871

No. 767.

Furnishing explanation in reference to the system of signalling proposed to be adopted at large Bridges.

No 6/1871

No. 4138 GREAT SOUTHERN OF INDIA RAILWAY.

AGENT'S OFFICE,

NEGAPATAM, August 14 1871

21

35

From

THE AGENT,

Great Southern of India Railway,

To The Acting Consulting Engineer for Railways Madras

SIR,

The enquiry contained in the first paragraph of your letter No 241 of the 3d Instant having been referred to the Resident Engr. I have now the pleasure to enclose a copy of that Officers reply

In answer to your second question I have to state that no train is allowed to leave one station until intimation (from ~~another~~ the station in which direction the train is proceeding) has been received by telegraph that the line is clear.

I have the honor to be
Your most ~~obt~~ obedt Servant
William [illegible]
Agent

No. 4138

From
The Agent
G. I. P. R.
To
The Agt. Consulting Engr.
for Railways

Dated 14th } August 1871
Recd. 16th }

Enclosing copy of Resident Engineers reply regarding the enquiry contained in Consulting Engineer letter No. 241.

Trichinopoly 9th August 1871

No. 1275 9.

William S. Betts Esqre

My Dear Sir,

In answer to your letter No. 6091/2120 I have to inform you that the Rules and Regulations to be observed by all Employees on this Railway, are printed both in English and Tamil, and that a Copy is handed to each Inspector, Sub-Inspector, gang=maistry and Watchman - The Inspectors own Copy is of course in English, and when a Sub Inspector can read and understand English, his Copy is also in English, if he cannot read English he is furnish=ed with a Tamil Copy. All Gangmaistries and watchmen have a Tamil Copy, but very few can read as might be expected in men of their posi=tion. Each Inspector is responsible that his Sub Inspector and all his gangmaistries and Watchmen thoroughly understand the rules and regu=lations, so far as their work is concerned and no man is allowed to go on the Line as Gangmaistry or Watchman until the Inspector has satisfied himself that he understands the rules-

All our Permanent Way Inspectors have served in the Capacity of Sub Inspectors on this Line and have been familiar with the rules and regulations for years-

There is no fixed time for examining the Watchman and Maistries as to their Knowledge of the rules and regula=tions, but the Inspectors satisfy themselves from time to time that they are understood

by

by all employed on the Line under them –

Yours truly
(Sigd.) Wm. Griffith
Acting Resident Engr.

Exd.

(True Copy)

[illegible signature]

Asst. Clerk.
11. 8. 70.

No. 6189/71

Copy of letter No. 12321 dated 18 May 1871. from Acting Resident Engineer to Agent.

With reference to the 9th para of Government order No. 106 I have to report as follows:—

The opened portion of our line is 168 miles long and is divided into four lengths of about 42 miles each. In charge of each portion there is an Inspector of Permanent Way and under him a Sub Inspector. The Inspectors are in the first place responsible for the security of all Bridges and other works on their lengths, but as it would be im-possible for an Inspector to examine all works under his charge every day the rule hitherto has been for each Inspector to examine every Bridge on his length once a fortnight and to send in a report in the form of a certificate

certificate to the Resident Engineer with any remark he may have to make as to the state of the works under his charge - All Bridges are examined every morning before the passing of the first train by the Gang Maistries who have each charge of two miles. The line Watchman also goes over his two miles in the morning to see that all Keys and Bolts &ca are secure and to make them so if they are not before the first train arrives -

In the event of a Gang Maistry or line Watchman finding anything defective with the works or Way that might endanger the safety of a train, it is their duty to show a "danger signal" up and down the line, and to report the matter at once to the station on each side, from which points the news would be telegraphed to the Inspector. When Special trains are running it is some times found advisable to put on a few extra watchmen who are generally selected from

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from the Gang coolies in preference to employing entire strangers to the line.

In conclusion I have only to say that I consider the system a good one for a line on which night trains are not run, and that I do not at present see how it can be improved without adding very considerably to the cost of maintenance.

Presano

Recd 22d Augt/71
with letter No 4035 & 20

No 6189/71
Prov-26th Feby/72 Lo po 442. —

Recd. for filling! — 80/45

No.

CONSULTING ENGINEER'S OFFICE.

Railway Department.

No. 570

From Major H. L. Prendergast R.E.
Ag. Consulting Engineer for Railways,

To Colonel J. Carpendale R.E.
Secretary to Government,
Public Works Department,
Fort Saint George.

Sir,

With reference to G.O. No. 569 of the 27th April 1871, in the Judicial Department, I have the honour to forward letter No. 386 of the 28th June from the Agent and Manager of the Madras Railway, giving explanations regarding the arrangements for the safety of traffic on the North-West Line before the Cheyair bridge accident,

and

and as now proposed.

2 The statements made by the Resident Engineer Mr Roberts, which are also supported by the Acting Chief Engineer are strangely at variance with the conclusion arrived at by Mr Master in para 41, that no copies of the Circular Memorandum for the guidance of Line watchmen had ever been supplied for use on the North West Line. The records of the Chief Engineer's Office shew that the books have been repeatedly issued to the North West Line: and Mr Going affirms that the watchmen have been trained in strict conformity

conformity with the Rules. Rule No. 3 also provides for Line watchmen being instructed as to their duties, when unable to read even the vernacular copy of the rules.

The Circular Memorandum was forwarded to the Government of India for confirmation of the rules in July 1865, and sanction was given in November of the same year. The rules were first printed in May 1865 and have been kept in use, ever since. A copy is enclosed.

Vide L. Cr No 3773. / 18 Decr 1865.

I have personally examined the Railway Officer's books, and found at Arconum in the Resident Engineers office

an

an entry of the receipt of Issue note No. 714, dated 10th August 1870, conveying 50 copies of the Circular Memo: Viz in Tamil 20, in English 2, and in Teloogoo 28. I also found in the Chief Engineer's office at Royapuram the same Issue note filed; it bears the signature of Mr. Pfeil, and also of Mr Jackson the Sub-Inspector at Cuddapa who was under the Inspector Mr. Smith, and signed the note in acknowledgement of receipt of the 50 copies.

3 The Acting Agent is unable, para 4, to offer any suggestions as to the improvement in these rules: but mentions

in

in para 6 that from the 1st June last the number of night watchmen had been increased to allow a man for each mile and a special watchman for the sole charge of each large bridge. Two Inspectors being also appointed to see that the watchmen are at their posts at night.

4 . . . . In the Rules and Regulations for the Madras Railway Company in Section XVIII it is laid down in para 22 that "each Foreman or Maintenance
" must watch over the portion of
" the Permanent way in his charge
" every day before the departure
" of the first train", and in para 33 that "each Foreman

or

"or Maistry is required in the
"event of a flood to examine
"carefully the action of the water
"through the culverts and bridges
"on his length" while by the
Circular Memo para 12, the duty
of Watchmen is "to walk daily
"at least four times over their
"respective lengths, to see that
"the Line is in proper order".
In these rules nothing is said
about night watchmen, nor
of inspections by night; and
I think it advisable that
rules should be submitted
for the approval of the Govern-
-ment, defining the duties
of night watchmen, both
at the large bridges, and
on other parts of the Line,
and

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and also the manner in which the Inspectors of night watchmen will exercise their supervision.

No. 430. 5 With a second letter of the 19th July, the Agent furnishes a Report from the Telegraph Engineer explaining the form of the block system of signalling which he would propose to adopt.

By the block system, the Line is supposed to be blocked between two stations; that is, no train can come upon that portion of the Line until a signal is given that the Line is clear. Mr. Winter shews, that if the telegraph wire is broken, the signal

cannot

cannot be given, that the Line is clear: and therefore no train coming from either direction would be allowed to pass the stations between which the wire has been broken. He would further however suggest a plan of his own adaptation, by which a danger signal would be exhibited at each station by red discs on the wire being brought to earth. A watchman would by these means be able to convey intimation from any point on the line, to the nearest station in both directions, not merely that the line is not clear, but that something has happened causing

the

the line to be blocked.

Mr. Winter has further devised a plan of self-acting signals for the large bridges; in the event of a bridge giving way, the wire over it would cause a signal to be exhibited at each end of the bridge. A full description of this method of protecting a bridge, with reference to letter from the Government of India of the 9th June 1871 No. 1098, is given in the Agent's last letter No. 767 of the 18th December 1871.

*Vide G. C. No. 1886 of 17th July 1871.

The arrangements proposed by the Telegraph Engineer are not at present submitted for sanction they would involve a heavy outlay and will have to be considered

when

when the estimates are prepared. In the mean time, as noticed above, each large bridge is protected by a watchman, and each mile of line likewise.

6 Mr Anderson records his opinion in his letter of the 28th June, para 10; that night traffic can never be conducted with perfect safety on the North-West Line, under the existing state of the law, as regards the responsibility of the owners of tanks. The statement accompanying shows too, that the line has been damaged on several occasions by the bursting of tanks.

Measures have been taken by the Railway Officers to add to the security of the masonry works in general: and in conformity with G.O

No

55-6

No 1849, dated 13th July 1871.
every bridge is to be reported on, that has not the protection of a flooring and retaining walls. The Railway will thus be placed in an efficient condition with respect to floods; but there is still the liability to danger from the banks along the Line.

7 I beg to recommend for the consideration of the Government that one or more competent officers should be deputed to examine all the banks that might affect the North-West Line, with a view to their present state being ascertained, and necessary repairs or improvements —
carried

carried out. It is in my opinion, desirable, that not only the tanks adjacent to the Railway should be inspected, but also others above in the same drainage basin, for it may happen that a tank which is itself in good order, will be breached, by the bursting of other tanks above, that have been neglected.

In the year 1858, when the South-West Line was injured by the bursting of tanks, the Government gave orders for immediate repairs to all tanks to secure the Railway from further damage – and in March of the following year the Chief Engineer furnished

G. O. No. 577
26' October 1858.

757

G.O. No. 210
11th April 1859.

furnished reports of the District Engineers of Chingleput Salem and Coimbatore.

I do not find any general notice as to the condition of tanks along the South West Line, of more recent date, and thus after a lapse of 12 years, it would probably be both satisfactory to the Government, and assuring to the Railway Company, if an inspection were made in each District of the present state of the tanks.

Many tanks on both Lines are owned by Zemindars, and private holders of land, who are not liable to direct interference; but I would suggest that all tanks should be

examined

examined and estimate prepared for Repairs that may be needed without regard to the source from which the funds may have to be provided. Some arrangement would at the same time have to be made by the Revenue Officers with the Zemindars and others, regarding the execution of Repairs or the provision of funds.

The Agent has again brought to the notice of the Government, the subject of liability to danger from tanks, near the line, in his letter No. 702 of the 22nd November which has been recorded in G. C. No. 3151 dated 14th December 1871.

8 The Agent of the Great Southern of India Railway explains in the papers marginally noted, the system in force on his line.

From Res^t Eng^r: N° 12321 of 18° May 1871
From Agent N° 4138 of 14^t Aug/71.

An Inspector sends a certificate every fortnight, of the state of the works under his charge. All bridges are examined every morning by a Gang Maistry, appointed to two miles of the line. The watchman also goes over his two miles in the morning, to see that keys &c are secure, before the trains pass.

The rules as per copy forwarded, are printed in English and Tamil, and given to Inspectors, Sub-Inspectors, Gang Maistries and Watchmen. The Inspector is held responsible that every

one

one under him thoroughly under-
stands the rules.

There are no night trains on this Line at present; and it is not contemplated that there should be any night service on the length of line now open.

Madras
28 December
1871

I have the honor to be
Sir,
Your most obedt Servt
Chas. Pendergast. Major R.E.

Agt Consg Engr: for Rlys

No 442
R.C. 18 Jany/72 R 22nd
C. 12 Jany/72 R. 16

M 1871 Deptt
Pn affairs for Rlys No. 6189

RAILWAY DEPARTMENT.

(20)

From
Agt
The Consulting Engineer
for Railways,

To
The Secretary to Government,
P. W. Department,
Fort St. George.

11-6. Rec'd

No. 535-536 : 26 Feby/72

Dated 28 } December 1871.
Received 30 }

No. 570

Encl: 13

Submitting correspondence from the Agents Madras and G. I. P. Rly giving explanations regarding the arrangements for the safety of traffic on the N.W. Line before Chepauk bridge accident and as now proposed

No. 6 No – Endo

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26

MADRAS RAILWAY.

AGENT AND MANAGER'S OFFICE.

Madras, 6th January 1872

From

R. B. Elwin Esqre.

Agent and Manager. of the M. R. Co.

To

Major H. L. Prendergast R. E.

Ag: Consulting Engineer for Railways.

SIR,

I have the honor to enclose for the information of Government the copy of a communication which I have just received from the Traffic Manager reporting a serious error which was made in the alteration of Meeting Stations this morning but which was happily unattended with accident.

No. C/5 6th January 1872.

2. With reference to the last paragraph of Mr. Church's letter, I beg to state that I have instructed him at once to reduce Veyas Row and on no account to entrust him with the duty of altering trains again.

I have the honor to be
Sir,
Your most obedient Servant
[signature]
Agent and Manager

MADRAS RAILWAY.

From

The Agent and Manager.

To

The Consulting Engineer

P. W. 217/72 for Railways.

Dated 6th January 1872

Recd. 8th

No. 6.

Reporting an error that was made by the Station Master at Madras in the alteration of meeting stations

A. Rea 27
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C/0/5.

Madras Railway
Traffic Manager's Office.
Madras 6th January 1872

The Agent and Manager.
M. R. Co.

Dear Sir,

Alteration of Meeting Stations

I beg to report that in altering the Meeting Station of the 8.15 A.M. from Beypoor and the 5.40 A.M. Special Troop Train from Madras this morning, Veyas Row, Station Master of Madras, who was deputed to perform this duty, omitted to stop the 5.40 Train which was late (as prescribed in the Rules printed at Page 34 of the working Time Table dated 1st October 1871) before he directed the 8.15 A.M. to proceed, and the consequence was that both Trains were between Tinnanore and Trivellore Stations at the same time. Fortunately the Trains were stopped about one mile apart when within 2 miles of Trivellore, and the 8.15 A.M. was backed into that station to allow the 5.40 Special to pass.

I have withdrawn from Veyas Row the power of altering the Meeting Stations of Trains, and do not think it is desirable that he should be again entrusted with the important

important duty.

Yours &c.
Wm. H. E. Church
Traffic Manager

True copy
Wm. W. [illegible]
Agent and Manager

e. 11/12. 24. do

p 65

No. 17

Submitted to the Government-

The special troop train did not get away from Madras till some time after the hour fixed for its departure viz 5-40 A.M, on the 6th instant; and the station-master at Madras failed to give notice to the guard and driver of the troop train, to stop, before he signalled to the ordinary train coming in the opposite direction, to proceed from Trivellore - According to the rules given in the

the Working Time× Table at Page 34: the station master should× have ~~just~~ first ordered the troop train to stop at Tinnanore, and the guard and driver having acknowledged the order: advice should then have been sent to Trivellore, to allow the meeting train to come on to Tinnanore. In consequence of the station master's neglect of duty however the two trains were running face to face, between the Tinnanore and Trivellore stations: fortunately it was in the day-time, and the line being both level and without any sharp curves or obstructions

× Copy enclosed

67 29

obstructions to impede the view: the driver of each train perceived the danger at a distance: and thus the collision was averted.

2 This occurrence suggests grave doubts as to the system of working traffic; affording security: and I think the agent should be requested to take into full consideration, at once, the question of introducing the block system, and to furnish the estimate as referred to in the papers submitted with my letter No. 189 570 dated 28th December 1871.

3

3 The Agent has reduced the position of Venus Rao the station master, and directed that he shall not again be entrusted with the duty of altering trains.

Madras }
13th Jany }
1872 }

Hew Prendergast Major R.E.
Ag Cons Eng. for Railways

To
The Secretary to Government
P. W. Department
Fort St George

P. W. 1872 Depart.
Pro: of Govt. for February

Tran (29) No. 217.

The Ag. Cen. Engr.
for Rys.

To The Secy to Govt.
P. W. D.

Dated 13
Despd. 15 } Jany/72
Recd. 16

Encl: 3. No. 17

2-6 R.D.

Submitting
agents letter regard
ing the troop train

No. 443

Rec. 27 Jany/72. R 3rd Feby/72
C 20 Jany/72 R 26

No. 535 - 536 - 28th Feby/72

List
[illegible] orders
6189
217
Cir

Print Gen. [illegible] to [illegible]
Excpt. of letter No 3410/10 of Feb/71 from
1st Engr. to Rly. the last & date of which
only should be given & the same
from the [illegible]

No 535.

In submitting the result of his enquiries in connection with the Chegair bridge accident on the night of the 20th October last the Magistrate of Cuddapah pointed out certain particulars in which he considered the Company's rules to be deficient and offered suggestions for the more safe and efficient conduct of the traffic in future. In reviewing Mr Master's report the Government in the Judicial Dept. requested the Agent and Manager of

N.

[illegible]

G.O. No 569 d/. 27th April/71.

of the Madras Railway to state his opinion through the Consulting Engineer to the P.W. Dept. on the practicability of the proposals made, and in the papers above recorded these instructions are complied with.

Mr. Masters reported that the latest rules issued for the guidance of line watchmen were never distributed on the N.W. line, and that even those rules contained no instructions as to the precautions to be taken in bad weather or any particular orders in regard to the protection of large bridges by signals or otherwise. He accordingly suggested that a new set of rules should be framed embracing these omissions and that measures should be adopted

adapted for the stricter supervision of the night watchmen and the introduction of an improved system of signalling on occasions of special emergency. Mr. Masters further recommended the employment of a night staff for every station without exception which would be available for carrying out the provisions of the rule which requires that no Engine with or without a train shall be permitted to leave one station for another until it shall have been ascertained by means of the electric telegraph that the line between is clear of all impediments.

The papers now before Govt. show that Mr. Masters was mistaken in supposing that

that the rules issued for the guidance of line watchmen were not supplied to those on the N. W. line, and that their instruction in them had been neglected.

At a special meeting of Railway officers which was held in June last to consider the precautionary measures necessary to insure safety in working night trains on the N. W. line it transpired that the number of night watchmen had been increased so as to allow one man for each mile of railway and a special watchman for the exclusive charge of each large bridge, two additional Inspectors having been also appointed to accompany night trains and

supervise

32 Inspections the watchmen at their posts. On the same occasion the Telegraph Engineer of the Company exhibited an apparatus for signalling across large bridges, which, in the event of serious damage would cause a danger signal to be displayed at either side; and it was decided that the object sought to be affected by the employment of night signallers at all Stations would be more completely attained by the block system of signalling with some improvements suggested by Mr Winter, which would prevent the passage of a train over any portion of the line that may be blocked until a signal is given showing

showing the line to be clear.
The Government approve of the principles of these precautionary measures and direct that designs and estimates of the cost of carrying them into effect may be submitted as early as practicable.

The staff of watchmen now provided by the Company along the line and on the large bridges appears to be sufficient for all ordinary purposes. Special regulations for the conduct and movements of night watchmen with the duties of those in charge of bridges clearly defined should be submitted for approval.

The Government are inclined to doubt the gravity of the danger apprehended

apprehended from the bursting of tanks along the Railway if the bridges by which escape is supplied are well designed and well kept in proper order, but they do not think it unreasonable that a special enquiry should be made into the state of all the tanks from which damage in case of bursting might accrue to the Railway. The Supdg. Engineers of the 3, 4, 5 & 7th Divisions will accordingly depute competent officers to examine all tanks in which breaches might affect the sections of the line within the limits of their respective Divisions with a view to their present condition being ascertained and the necessary repairs being carried

(20)

carried out. The exa-
mination should extend
not only to the tanks
adjacent to the Railway
but to all above in the
same drainage basin.
In the case of tanks
belonging to Zemindaries
the Collectors will be
desired to use their au-
thority with the Zemin-
dars to obtain the repair
of such where defective.

The Government
observe that night trains
do not run on the G. S. of
I. Railway and that
the "line clear" system
of working is in operation
on that Railway.

H. C. No 536 d/

Copy of the above is
forwarded to the Govt. of
India with reference
to their letter No 1098 d/
29th June 1871.

To
19 The Ag: Consulg: Engr for Railways
36 " S. Engrs. 3: 4: 5: 6 & 7th Divs
21 " Rev: Dept
11 " Jud: Dept

Despd 1/3/72.

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Despd 1/3/72 with 31 spare Copies ~~of Govs~~
~~535 of 1872~~ & two books.

2

(Sd.) [illegible] 2d

Rc. 9 Feby 1872 R. 13th
D. 3d July 1872 [illegible] 4th

For Orders.

In reporting the result of his enquiries in connection with the Railway accident which occurred at the Cheyair Bridge on the night of the 20th October last the Magistrate of Cuddapah, pointed out certain particulars in which he considered the rules of the Railway Company were deficient, and in reviewing Mr. Masters' report, the Govt. in the Judicial Department requested the Agent and Manager of the Madras Railway

The Railway authorities have provided a watchman for every mile of way and have appointed a Special watchman for each important Bridge. This Staff would appear to be sufficient. I would require the Railway Authorities to submit Special regulations for the conduct & movements of night watchmen & especially for the Bridge Watchman.

I would also refer for report Mr. Masters' invention

Railway to report his opinion through the Cons. Engineer to the Public Works Departt. on the practicability of the suggestions made by the Magistrate.

These instructions are complied with in the papers which are now circulated. Mr. Master brought to notice that the Rules for the guidance of line watchmen contained in a Circular Memo: were never distributed on the North West Line, and that even those rules contained no instructions as to what should be done in bad weather,

for a self acting danger signal which would appear at either end of a bridge in case of rupture.

I am inclined to doubt the gravity of the danger apprehended from the bursting of Tanks above the Railway if the bridges by which an escape is supplied are well designed & well kept in order but I don't think it unreasonable that a special enquiry should be made into the state of all the Tanks from which damage in case of bursting

or any orders relating to large bridges or the manner in which signals should be exhibited at or on them. He was therefore of opinion that a fresh set of Rules should be prepared, their provisions being made known to the watchmen. The further suggestions made by Mr. Master were that measures should be adopted for the supervi-sion of the night watch-men who he stated under present arrange-ments were practically uncontrolled, and for the introduction of some more permanent method

must be accessible to the Railway. — In the case of Tanks belonging to Govt. measures for the repair [illegible] of the bunds must be made; in the case of Tanks belonging to Zemindars the Collector must be deemed to have authority with the Zemindar to obtain the repair of such Tanks when deficient.

N

A. P.

[illegible]

method of signalling than at present exists on occasions of special emergency. Mr. Master also recommended the employment of a night staff for every station even though trains may not stop at them, and urged the necessity for en-forcing a strict com-pliance with the rule that no Engine with or without a train shall be permitted to leave one station for another until it shall have been ascertained by means of the telegraph that the line between is clear of all impediments.

The

The papers circulated show that Mr. Master was mistaken in supposing that the Circular Memo containing rules for line watchmen were not distributed on the North West Line, and it also appears that the precaution of instructing the watchmen in their duties had not been neglected. At a special meeting of Railway Officers which was convened in June last to consider what measures were necessary to ensure the safety of night trains running on the North West Line, it

it was explained that from the 1st of that month the number of night watchmen had been increased in order to allow a man for each mile. A special watchman had also been appointed for the sole charge of each large bridge and two Inspectors were entertained who were to accompany the night trains to see that the watchmen were at their posts at night. At the meeting the Telegraph Engineer exhibited an apparatus for signalling across large bridges which

the

the Committee were of opinion should be adopted in addition to erecting a Semaphore signal on each side of a large bridge. It was believed that the object sought to be at-tained by the employ-ment of night signallers at all stations would be more completely attained by the block system of signalling with some additions suggested by Mr. Winter, by which no train could come upon the portion of the line that is blocked until a signal is given that the line is clear.

These

These suggestions have not been carried out. They will be taken into consideration when estimates are prepared.

The Cons. Engineer is of opinion that as the rules in force do not make any allusion to night watchmen or to inspections by night a draft of rules defining the duties of night Inspectors and Watchmen should be submitted for approval.

The Railway Agent points out that night traffic can never be conducted with perfect safety under the present

state

state of the law as re-
-gards the responsibility
of the owners of tanks,
and he forwards a
statement to show
how frequently damage
has been caused by the
bursting of tanks Major
Prendergast recom-
-mends that one or
more competent officers
should be deputed to
examine all tanks
that might affect
the North West Line,
with a view to their
present condition
being ascertained
and the necessary
repairs carried out,
and this examination
he would extend

not

not only to tanks ad-
-jacent to the Railway
but to all above in
the same drainage
basin. He further
recommends that all
tanks along the South
West Line should be
inspected and the
necessary repairs
carried out without
regard to the source
from which funds
may have to be pro-
vided, the necessary
arrangements being
made by Revenue
officers with Zemin-
dars and others.

There is no night
service of trains on
the

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the Great Southern
of India Railway.

J. Jan. 10th.

(20)

R. C 18 Jany/72 R. 23d

C 12 Jany/72 R. 16

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93

From the Ag: Consulg: Engr. for Railways.

Reporting that a serious accident on the Madras Railway was imminent owing to an error made in the alteration of meeting station of Trains, and recommending the issue of Orders for the introduction of the Block System of working } No 17 d/13th Jany/72.

Circulated for orders.

The papers in connection with the introduction of the Block System of working the traffic on the Madras Railway are now in circulation

[illegible]
20/1/72

I have not yet seen the papers regarding the Block System here alluded to.

N [illegible]

The Block system is explained in letter No. 2 in this of the 10th July: I think that it ought to be introduced.

A. J.

[illegible]

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1/10/1897 217

Govt. of (1872) Madras.

PUBLIC WORKS.

To The Offg. Consulting Engr. for Railways
and
To The Secretary to the Govt. of India

Dated

Recd. Encl. 13

G. O. 28 Febry 1872, No. 535-536

Nos. 442 & 444 & 445

...ie (Railway). Copying or... Correspondence, sub... ...ted by the Consg Engr for Rys, ...ing arrangements for ... safety of traffic on the Madras Ry.

Forwards copy of Var.: Correspondence, submitted, the Consg Engr for Rys. regard...